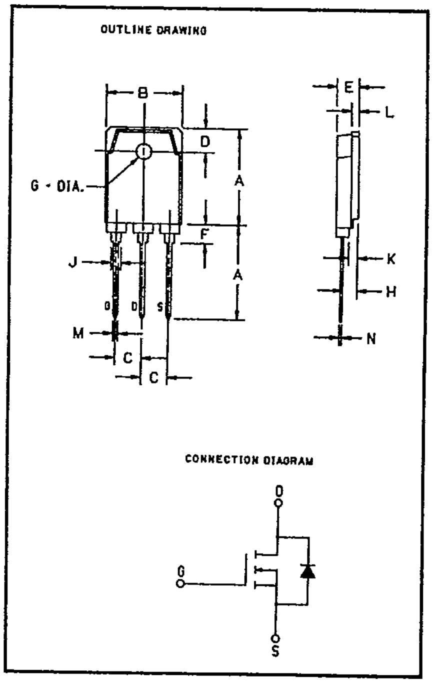
POWEREX

JS0145A1
JS0150A1 Tentative

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Single EXMOS™ MOSFET

15 Amperes/450-500 Volts



450-500 Volts JS0145A1, JS0150A1 Outline Drawing

Dimension	Inches	Millimeters
A	.787	20
B	.614	15.6
C	.214 ± .008	5.45 ± 0.2
D	.197	5
E	.177	4.5
F	.157	4
G	.126 ± .008 Dia.	3.2 ± 0.2 Dia.
H	.110	2.8
J	.079	2
K	.071	1.8
L	.059	1.5
M	.039	1
N	.024	0.6

Description

Powerex Single EXMOS™ MOSFET Transistors are designed for use in applications requiring Hi-Frequency switching and low loss control.

Features:

☐ TO-3P Package

☐ Vertical DMOS Construction

☐ Low Drive Requirement

☐ No Second Breakdown

Applications:

☐ AC Motor Control

☐ UPS Inverters

☐ Switch Mode Power Supply

☐ PWM Regulator

Ordering Information

Select the complete eight digit module part number you desire from the table- i.e. JS0150A1 is a 500 Volt, 15 Ampere Single EXMOS™ MOSFET.

Type	V_{DSS} Volts (×10)	Current Rating Amperes (15)
JS01	45	A1
	50	

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Maximum Ratings $T_C = 25°C$ unless otherwise specified

Characteristics	Symbol	JS0145A1/JS0150A1	Units
Junction Temperature	T_J	−55 to 150	°C
Storage Temperature	T_{STG}	−55 to 150	°C
Drain Source Voltage, $I_D = 1mA$, $V_{GS} = 0V$	V_{DSS}	450/500	Volts
Gate-Source Voltage	V_{GSS}	±30	Volts
Continuous Drain Current	I_D	12/11	Amperes
Continuous Source Current	I_S	12/11	Amperes
Pulsed Drain Current Repetitive	I_{DM}	45	Amperes
Power Dissipation	P_T	150	Watts
Max Mounting Torque, Mounting Screw (M3)	—	7	in.-lb.

Static Electrical Characteristics T_C, $T_J = 25°C$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JS0145A1 Min.	 Typ.	 Max.	JS0150A1 Min.	 Typ.	 Max.	Units
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$	—	—	1	—	—	1	mA
Gate Source Leakage Current	$\pm I_{GSS}$	$V_{GS} = \pm 30V$, $V_{DS} = 0V$	—	—	0.1	—	—	0.1	μA
Gate Source Threshold Voltage	$V_{GS(th)}$	$I_D = 1$ mA, $V_{DS} = 10V$	2	3	4	2	3	4	Volts
Drain Source On State Resistance	$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 8A$	—	0.4	0.52	—	0.5	0.65	Ω
Drain Source On State Voltage	$V_{DS(on)}$	$V_{GS} = 10V$, $I_D = 8A$	—	3.2	4.2	—	4.0	5.2	Volts
Thermal Resistance, Junction to Case	$R_{\theta JC}$	—	—	—	0.83	—	—	0.83	°C/W

Source Drain Diode Characteristics T_C, $T_J = 25°C$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JS0145A1/JS0150A1 Min.	 Typ.	 Max.	Units
Source-Drain Voltage	V_{SD}	$I_S = 8A$, $V_{GS} = 0V$	—	1.2	—	Volts
Reverse Recovery Time	t_{rr}	$I_S = 15A$, $dI_S/dt = -20A/\mu s$, $V_{GS} = 0V$	—	900	—	ns

Dynamic Electrical Characteristics T_C, $T_J = 25°C$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JS0145A1/JS0150A1 Min.	 Typ.	 Max.	Units
Forward Transconductance	g_{fs}	$I_D = 8A$, $V_{DS} = 10V$	4	6	—	mhos
Input Capacitance	C_{iss}	$V_{GS} = 0V$, $V_{DS} = 25V$, $f = 1MHz$	—	2000	—	pF
Output Capacitance	C_{oss}		—	300	—	pF
Reverse Transfer Capacitance	C_{rss}		—	110	—	pF
Turn On Time (Note 1)	t_{on}	$V_{DD} = 200V$, $I_D = 8A$, $V_{GS} = 10V$ $R_{GEN} = R_{GS} = 50\Omega$	—	160	300	ns
Turn Off Time (Note 1)	t_{off}		—	250	500	ns

Note 1: Turn on Time (t_{on})=Turn on Delay ($t_{d(on)}$)+Rise Time (t_r)
Turn-off Time (t_{off})=Turn Off Delay ($t_{d(off)}$)+Fall Time (t_f)

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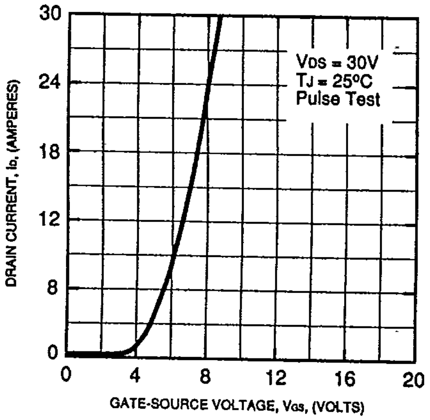
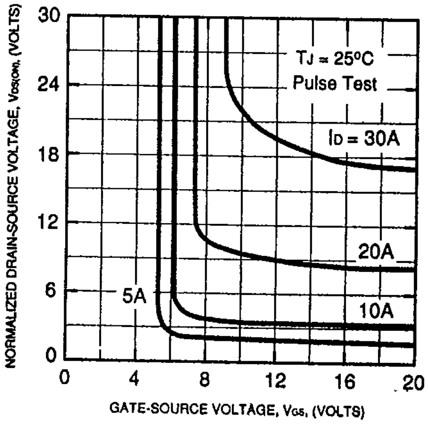
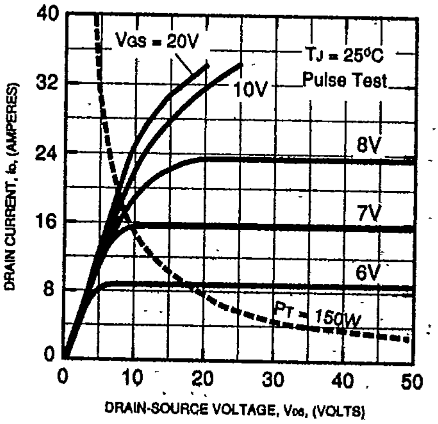
TRANSFER CHARACTERISTICS (TYPICAL) JS0145A1



NORMALIZED DRAIN-SOURCE ON-STATE VOLTAGE (TYPICAL) JS0145A1



COMMON SOURCE OUTPUT CHARACTERISTICS (TYPICAL) JS0145A1



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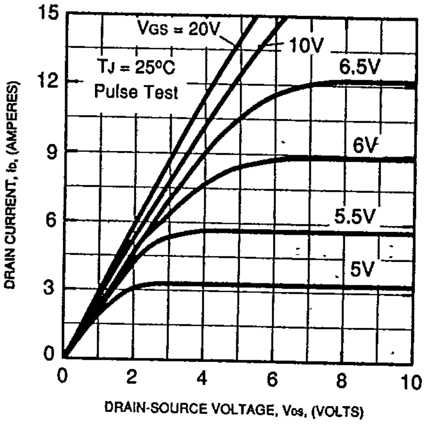
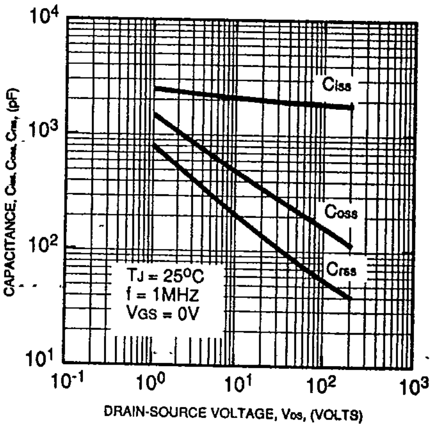
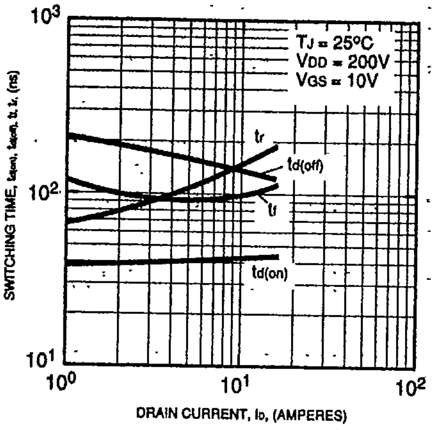


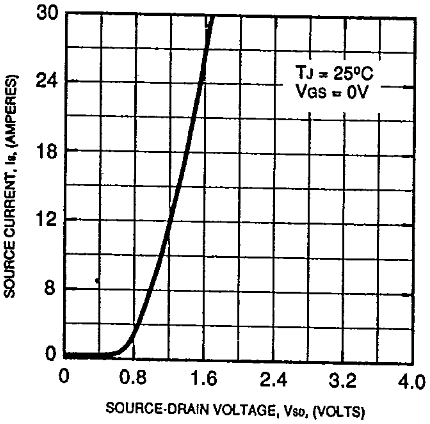
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL) JS0145A1



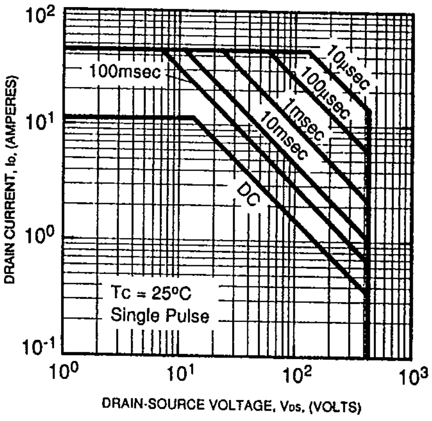
SWITCHING CHARACTERISTICS (TYPICAL) JS0145A1



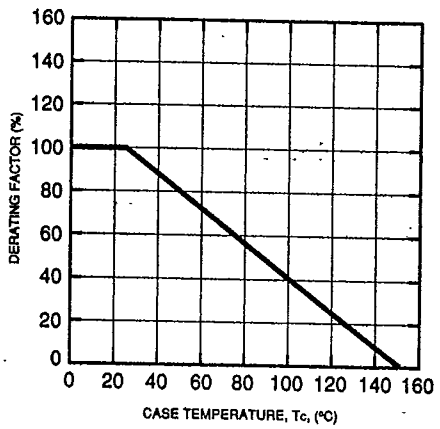
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL) JS0145A1



FORWARD BIAS SAFE OPERATING AREA (S.O.A.) JS0145A1



TEMPERATURE DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.) JS0145A1



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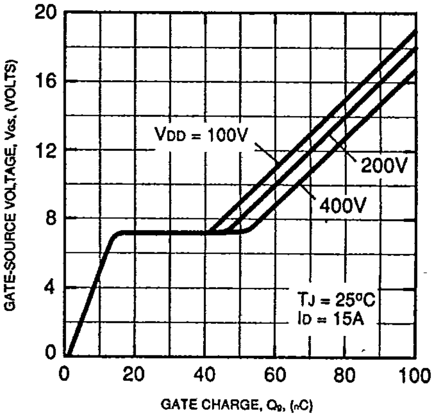
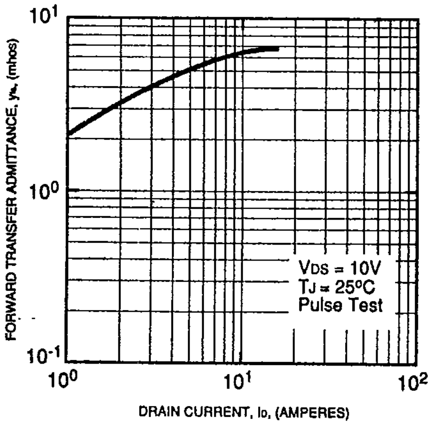
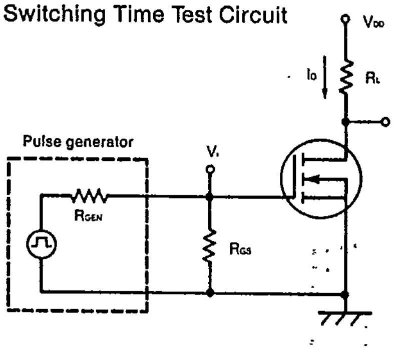
GATE CHARGE VS. VGS (TYPICAL) JS0145A1

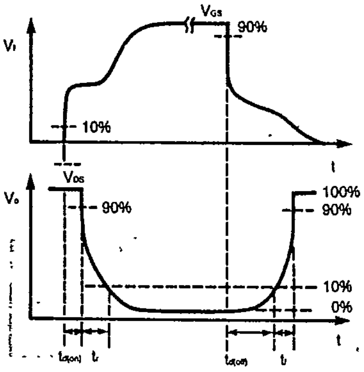


FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL) JS0145A1



Switching Time Test Circuit





Notice: MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling should be observed.

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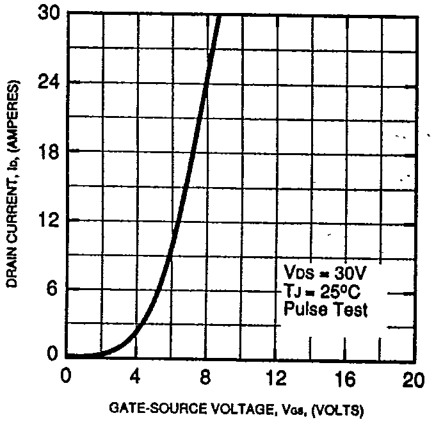
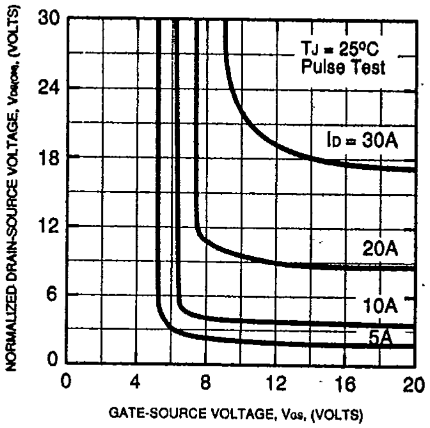
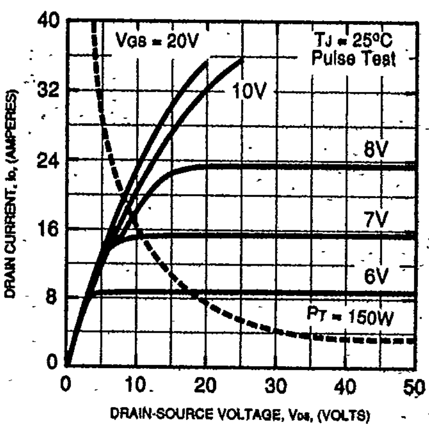


NORMALIZED DRAIN-SOURCE ON-STATE VOLTAGE (TYPICAL) JS0150A1



COMMON SOURCE OUTPUT CHARACTERISTICS (TYPICAL) JS0150A1



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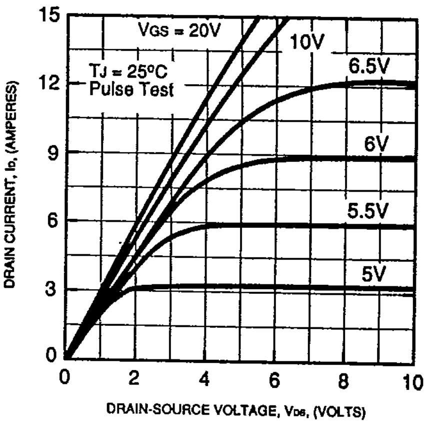
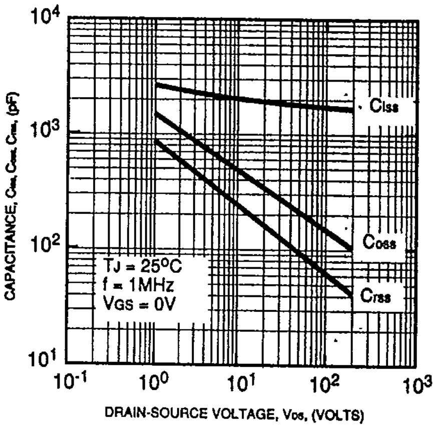
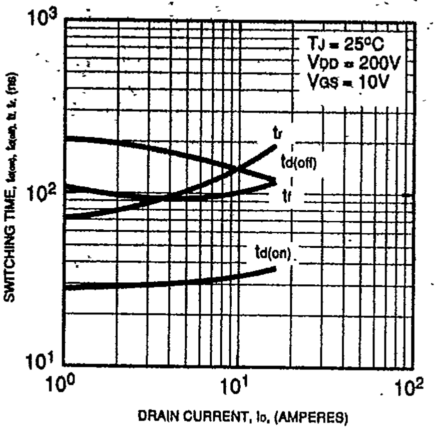


CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL) JS0150A1



SWITCHING CHARACTERISTICS (TYPICAL) JS0150A1



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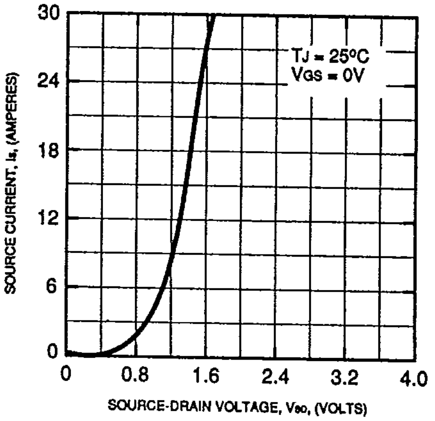

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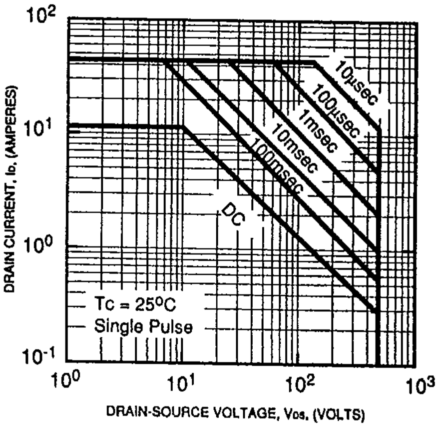

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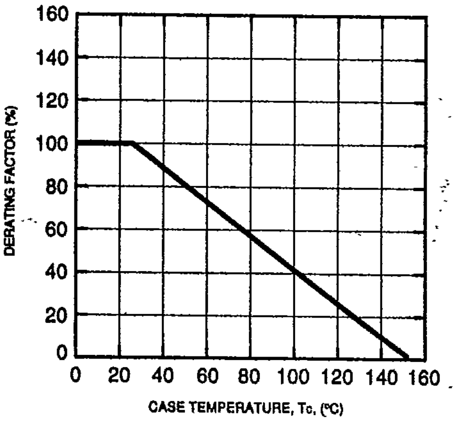

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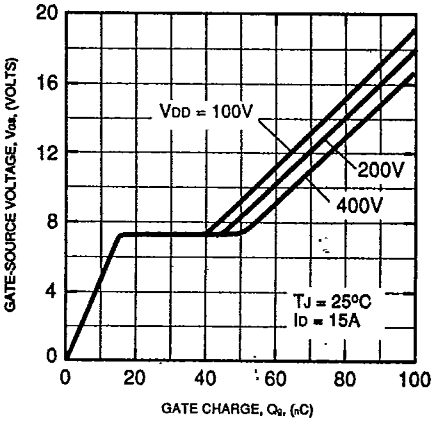

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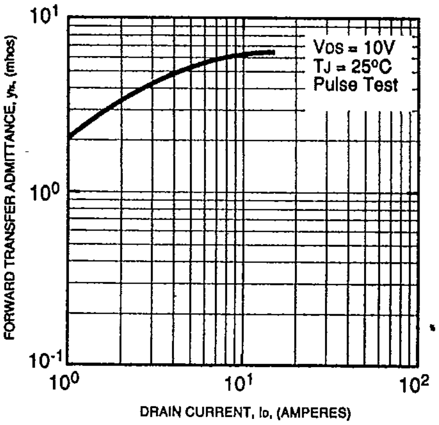

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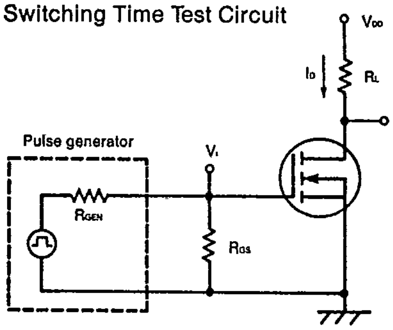

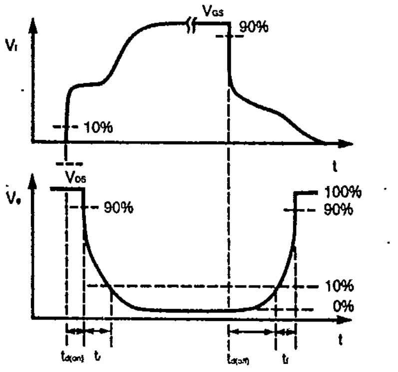

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